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ABSTRACT

Computerized writing (the digitized word) may affect the utility and meaning of reading and writing in coming generations. The digitized word poses no threat to the technology of literacy; it merely entrenches literacy further into Western culture by making certain operations faster, easier, repeatable, etc. One significant, positive by-product of the digitized word among students is its implicit encouragement toward collaboration among peers and with the instructor. Use of the digitized word facilitates composing, retrieving, recombining, and revising ideas and form, making transcription the least arduous part of the writing task. The videotext created by the digitized word is fluid, interactive, and "soft," thereby creating new metaphors for the process of thinking and composing. While the digitized word actually enhances and enlarges the technology of literacy, it challenges the authority of texts and traditional Western textuality as the dominant noetic in composition classrooms. In the best scenario, digitized writing will democratize knowledge and free writers to discover, understand, and reveal their worlds to themselves and others. However, society still needs wise men and women whose literacy connects them with the orality of the past and brings their present experience to the textuality of the future. (AEW)

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Process and the Digitized Word: Toward an Epistemology of Computerized Literacy

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Literacy is a slippery term. In popular usage "literacy" represents more than a set of basic communication skills and is quite often intertwined with a wide range of cultural values and functional skills whose connections with the ability to read and write are tenuous at best.[1] To correct the often highly honorific conceptions of literacy which abound, historians of literacy, linguists, and anthropologists like Harvey Graff, Walter Ong, Eric Havelock, and Kathleen Gough, have urged educators to demythologize literacy.[2] Their work suggests that literacy should be seen not so much as a cause of but a response to the complexity of human behavior.[3] Oral communication, natural, spontaneous, close to the self, was and is the first medium of expression among humankind, Jacques Derrida notwithstanding. And oral communication suffices until the human community develops socio-economic structures and personal relations that call for a more versatile, sophisticated means of dealing with the world.[4]

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This is to say that writing developed as human society demanded a technology for recording, storing, and transmitting information. The Phoenician syllabary and the Greek alphabet became the scaffolding from which writing evolved as a utilitarian technology that augmented oral language, extending human memory, classifying objects and events and imposing regularities on them, and making possible long distance communication.[5] In the ancient world literacy was not conceived as an educational tool in and of itself nor as a possession that every human being should acquire. Yet it did have dramatic effects on the processes of composition. Literacy splits the act of composing into two dichotomous processes: transcription and composition. (Print technology further bifurcates the process by giving prestige to typeset information over the chirographic or hand-written text.)

Nevertheless, despite its utilitarian origins, literacy eventually gave birth to what we might call Western textuality, a network of texts, authors, libraries, and communities of readers which bestows, balances, and/or restricts the authority of ideas.[6] And it is this term, *textuality*, that may be more valuable to us than literacy in understanding how computerized writing, or, as I will refer to it, *the digitized word*, may affect the utility and meaning of reading and writing in coming generations. For the concept of textuality comprises not only the notion of literacy as a technology that is, "a set of techniques for communications and for decoding and reproducing written or printed materials" (Graff 307), but also the notion of literacy as a paradigm for industrialized Western thought, a lens on the world through which reality is apprehended and interpreted.

Stage:	Utterance	Chirography	Print	Digital
INSTRUMENT	*Voice*	*Stylus*	*Keyboard*	*Cursor*
SEAT OF KNOWLEDGE	*Memory*	*Scroll*	*Page*	*Disk*
SEAT OF AUTHORITY	*wise men and women*	*literati*	*library*	*com-munity*
PRODUCT	*monologue, conver-sation*	*manuscript*	*book*	*soft/hard copy*

Figure 1. The evolution of textuality

Walter Ong amplifies this concept by suggesting that textuality ultimately made possible a more interior, analytical means of cognition than may be possible in exclusively or predominately text-less cultures:

> With such external, technological equipment (as clay tablet, skins, paper, styli, brushes, pens, inks), the mind can understand kinds of activities previously impossible. The analytically organized treatise, such as Aristotle's *Rhetoric* or *Physics*, can come into existence. There is no way for an oral culture to go through the kind of elaborately analytic thinking processes that constitute such work. (186)

In a more literate, that is to say, a more textual culture, knowledge and the authority behind it is located in a printed book. The wisdom of a

text-less, primarily oral culture is not, however, stored in libraries, but in persons, the wise man and the high priestess, the elderly and the experienced in living.

The movement in the West from a text-less to a text-full culture can thus be described as a movement from one noetic process toward another: once we acquire literacy and accept the authority of textuality we come to know and assess the world and ourselves in new, sometimes problematic ways. The world after literacy is filled not only with things and persons, but also texts, abstractions to be assimilated and controlled--ever resisted. But it would be a crass oversimplification to say that literacy somehow displaced orality or that textuality is itself a monolithic phenomenon, a unique brand of cognition devoid of resemblances to oral thought. It is closer to the truth to suggest that since the development of writing there has always been a symbiotic relationship between speech and text, and that each has influenced the other dramatically over the past three millennia, and continues to do so (Pike).

But that there are epistemological/cognitive consequences arising from the acquisition of literacy, all literacy scholars admit, even though they remain divided over how far reaching these influences are. What they can agree upon, however, is that new media arise in history to augment and obviate the functions of the host medium, and that they are, in fact, parasitic on it, and ultimately do not so much displace the host medium as subsume it.

It is here then that we can begin to situate the rise of the digitized word into our historical period as it compels our revision of what we know and believe about textuality and literacy. I will start with the generalization that the digitized word poses no threat to the technology of literacy, that is, of reading and writing as modes of learning, knowing, and telling. Indeed, the digitized word merely entrenches literacy further into Western culture, by making certain kinds of operations faster, easier, repeatable, etc., and by achieving these effects ironically enough through an interactive or dialogic mode that parallels features normally attributed to orality.[8] (The choices a Macintosh user has in selecting certain operations is presented in what is known as a "dialog box.")

I can illustrate these notions more concretely with reference to my own composing process as I have incorporated word processing into it, and with some observations about my students as they have attempted to learn and integrate word processing skills into their own composing strategies.

My composing process is now much closer to an oral process than ever before; my interactive drafting strategies imitate a kind of Rogerian dialogue I might have with another reader, except that I am the other reader, whose second, textual "voice" is made possible by the malleability of the "softcopy" videotext. In each successive draft I am creating a digital tradition parallel to the oral tradition common to my

ancestors. This paper is thus itself a product of many drafts, by which I mean not the unremarkable fact that in revising I have created multiple drafts of this paper, but that it is quite literally a product emerging from other, different drafts over several months--an electronic palimpsest, a text literally begun in midst of another textfile I had opened, and which has continued to evolve out of its host text as I have woven, merged, revised and edited it,

From my students' point of view, however, erasure (deletion) is the still most powerful operation indigenous to word processing. They are still too bound to a chirographic literacy to have progressed to where they themselves can see the value of or take advantage of the more constructive operations the digitized word affords. For initiates, word processing still a reductive process, more a matter of eliminating and substituting than of sifting and conjoining. They are still too mesmerized by the machine's transcriptive powers to recognize its heuristic potential as an idea or form generator. That's the next stage.

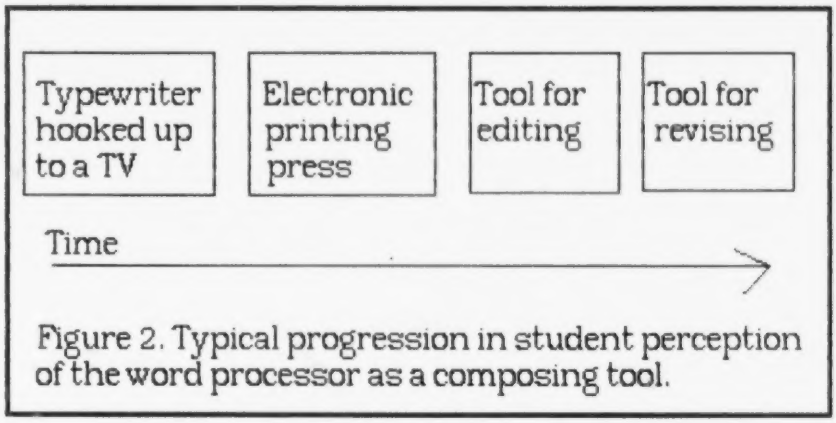

Figure 2. Typical progression in student perception of the word processor as a composing tool.

The one significant, positive by-product of the digitized word among students is its implicit encouragement towards collaboration among peers and with the instructor. Apprentice writers are more apt to solicit and to accept intervention in their texts while composing at a computer than are their paper-pen counterparts (Selfe and Wahlstrom). On the other hand, there continue to be disconcerting side-effects, namely, that students are often, at least initially, given to fulsomeness, to overrevision, to the unwitting repetition of form and content, and to some annoying proofreading errors, including omissions, and doubled and transposed letters--all attributable to the difficulty of editing on-line (Daiute).

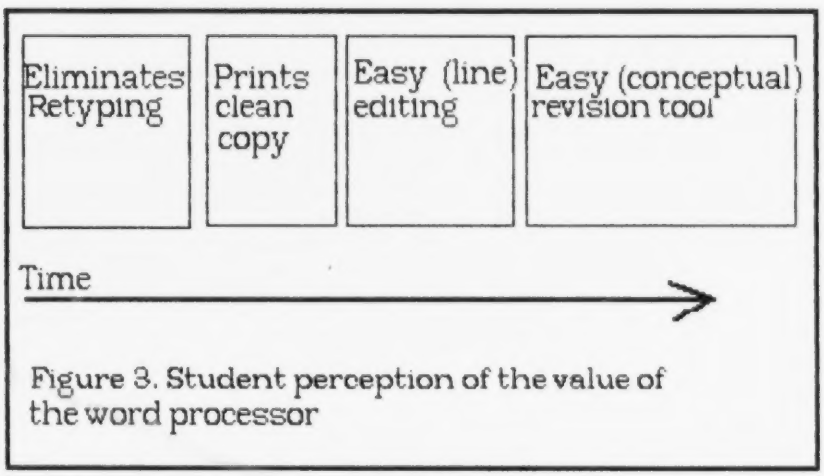

Figure 3. Student perception of the value of the word processor

Chirographic literacy inaugurated *transcription*, a particular technology for recording ideas but not necessarily generating or revising them. Chirographic textuality freezes time, orders it, apportions it linearly in texts, implicitly positing a view of composing and understanding similarly bound and fixed. The authority of the text is its

finality as an unerasable hardcopy product. In contrast, the new technology of the digitized word facilitates *composing*, the discovery, retrieval, recombination, and revision of ideas and form, making transcription the least arduous part of the writing task. The videotext created by the digitized word is fluid, interactive, "soft," thereby creating new metaphors for the process of thinking and composing. Its authority or meaning is located in the interaction between the author and the electronic community of readers in and for which the text was created (Heim). If there is any technological limitation to the digitized word at the present, it is that the writer cannot see the whole text at once, as he can with a hard copy spread before him. Thus, vestiges of the older technology of writing remain--as visual mnemonics to guide revision and editing that cannot be done conveniently on-line.

MEMORIZED/ UTTERED WORD	CHIROGRAPHIC/ PRINTED WORD	DIGITIZED WORD
Spontaneous	Fixed	Malleable
Situational	Static	Dynamic
Regurgitative	Authoritative	Collaborative
Idiosyncratic	Individual	Communal
Filtered through intuitive memory	Filtered through textbook advice	Filtered through software accessories
Voiced	Manual	Electronic
Constituitive	Transcriptive	Compositive

Figure 4. Comparative features in the evolution of textuality

While it can be seen, then, that the digitized word actually enhances and enlarges the technology of literacy, because of its incipient, oxymoronic electronic orality, it does, in fact represent a formidable attack on the Western tradition of textuality. Digitized textuality, in a more profound and sweeping way than such aberrations as continental post-structuralism or American reader-response practice, challenges the authority of texts and traditional Western textuality as the dominant noetic in composition classrooms.

The inexorable displacement of pen/paper chirography with the digitized word and the evolution of sophisticated speech synthesizers may yield a 21st Century that may be once again primarily oral but also remarkably textual. We could have, perhaps, either the best or the worst of both worlds: as in the preliterate past, our posttextual future may feature words that have the same power, flexibility, fluidity, spontaneity, and unpredictability of the oral world, words woven into texts that may be stored and transmitted, fixed, made permanent, granted a placed in a new canon. In the best scenario, digitized writing will serve humanity, democratizing knowledge, and freeing writers to discover, understand, and reveal their worlds to themselves and others.

Yet just as easily our future may hold a textuality in which words may be recalled, revised, reinterpreted, reintegrated into the life of the individual and the community at the whim of institutions and states--the familiar Orwellian nightmare. In the worst scenario, the digitized word will become a tool of alchemy which helps destabilize the

authority of authors, who surrender control of their texts to authoritarian instructors, reading communities, or software. In the next decade, as composition theorists continue to embrace modes of textuality that tend to fragment or pluralize reality, it is possible to imagine software developed to cleanse motive or purify cognition by flagging or overwriting offensive language or ideas, in other words, by imposing a preemptive or self-censorship on writers through the technology of writing itself.

The best defense against such a future is to refuse to equate the acquisition of certain technologies with intelligence, or human worth, and to insist upon viewing the teacher's task as not only the impartation of specific basic skills but also as the building of character, the clarification of democratic values, and the equipping our students with historical perspective. We still need, in other words, wise men and women whose literacy connects them with the orality of the past and bridges their present experience to the textuality of the future.

NOTES

[1] Literacy historian Harvey Graff has demonstrated that in Western culture literacy encompasses a constellation of values and beliefs far beyond what might attributed to the mechanical ability to read and write. These values range

> *from* empathy, innovativeness, achievement, orientation, "cosmopoliteness," information and media awareness, national identification, technological acceptance, rationality, commitment to democracy, *to* opportunism, linearity of thought and behavior and urban residence! (302)

[2] My abbreviated survey of the historical development of literacy has been greatly influenced by the work of my former graduate student, James Karpen, now assistant professor of English at Maharishi International University, Fairfield, Iowa. His research is, in fact, the source for the content of notes 3-8 in this paper. Professor Karpen's innovation and learnedness in this field of inquiry is vast and compelling.

3 In his book *The Emergence of Man,* John Pfeiffer discusses language itself as being the first such medium that was born in response to increasing complexity and that aided the organization of one's environment and society. He says about the debate surrounding the origin of language that

> What seems central to all arguments is the notion of increasing complexity, of a world becoming steadily richer and wider with the successive phases of hominid evolution, and the rise of increasingly complicated mechanisms to deal with it. To put it in the most direct terms, if objects of significance to ancestral primates in the trees could be numbered in the dozens, hundreds of thousands of natural and man-made objects had special importance for prehistoric Homo sapiens. Taking command of the world means classifying the objects and imposing regularities upon them, and language is our most effective way of doing precisely that. (410)

[4] In addition to prehistoric art, rich oral traditions were also vehicles for managing information for the purpose of dealing with complexity. In fact, the classicist Eric Havelock has studied the oral epic as a system of information management. In speaking of the attitude of the first literate Greeks toward Homer and Hesiod, Havelock says

> For those who lived within three hundred years of the invention of the alphabet, Homer stood with Hesiod as the original teacher of Greece. The instruction for which he is given credit is not literary or aesthetic, but sociological and utilitarian. It covers technology, including both military skills and (in the case of Hesiod) agricultural [skills], and also civic conduct, morals, and religion. He is viewed in short in those terms which I have already indicated to be appropriate to the documentation of an oral tradition, in which the epic has served as an exercise in the storage of cultural information for re-use. (125)

[5] Almost every large civilization has developed some form of writing: China, Egypt, Mesopotamia, the Mayan civilization. In his book *The Emergence of Society,* John Pfeiffer discusses the invention of writing in the Near East, saying that it

> was apparently the work of people deeply involved in scheduling supplies of food and other resources from outlying areas. We assume, although it remains to be demonstrated, that at somecritical stage the number and pace of transactions became too much to handle solely with the aid of seals, bullae, and other recording devices . . . . The implication is that there was a breaking point in efforts to cope with administrative complexities, a point at which record keeping would have collapsed if writing had not been invented. In our times the invention of high-speed computers with voluminous memories has a similar significance. (187)

[6] In his seminal work Empire and Communications, Harold Innis discusses how writing facilitated organization and order:

> The written word signed, sealed, and swiftly transmitted was essential to military power and the extension of government. Small communities were written into large states and states were consolidated into empire. The monarchies of Egypt and Persia, the Roman empire, and the city-states were essentially products of writing. Extension of activities in more densely populated regions created the need for written records which in turn supported further extension of activites. (10)

[7] The written and printed word reached its zenith in the 19th century, but then the invention of new technologies gradually began to overtake some of its functions. With the development of the telephone and other technologies, it became no longer necessary to write a letter to communicate over long distances. Such technologies as the radio made it unnecessary to read a newspaper in order to follow local and national events. TV and movies have made it unnecessary to read a book by the fireplace on a cold winter's evening. And computers are rapidly replacing paper as the preferred means of storage of information.

[8] Currently most interaction with computers is still alphabetic, but new technologies that have already been developed make it possible to store and retrieve information orally. And very soon these new technologies will make it possible to compose a text, edit it, transmit it, and retrieve it without that text ever using alphabetic code--the process will be entirely oral. Speech recognition is one of the most crucial developments in this area. If a computer can understand the spoken word, then it becomes possible to enter and retrieve information without one's being literate. Speech-to-text systems are on the verge of being developed. The Kurzweil voice processing system can understand a vocabulary of 30,000 words.

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